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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,151	06/08/2001	Yun-Suk Choi	1567.1009	6719

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STAAS & HALSEY LLP  
700 11TH STREET, NW  
SUITE 500  
WASHINGTON, DC 20001

EXAMINER

WEINER, LAURA S

ART UNIT PAPER NUMBER

1745

DATE MAILED: 11/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

09/876,151

Applicant(s)

CHOI, YUN-SUK

Examiner

Laura S Weiner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7 and 12-20 is/are rejected.
- 7) ☒ Claim(s) 5 and 8-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: On page 1, paragraph [0001], June 13, 2001 should instead be June 13, 2000.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1-4, 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Koksbang (5,411,764).

Koksbang teaches in column 1, line 15 column 2, line 4, that batteries include a lithium anode, a transition metal oxide composite cathode and an electrolyte which includes a lithium salt.

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A copper or nickel substrate is coated with a thin layer of molten lithium containing material by means of an applicator. Koksang teaches in column 3, lines 41-65, that the applicator used to apply a layer of molten lithium composition is a transfer roller. Koksang teaches in column 6, lines 55-68, that the molten material is in a controlled inert atmosphere.

4. Claims 1, 6 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Spillman et al. (6,410,181).

Spillman et al. teaches in column 1, lines 46-65, that lithium-magnesium alloy can be used to extend the temperature tolerance of a lithium anode above 180 degrees C. Spillman et al. teaches in column 3, lines 1-65, that the cell includes an anode electrode preferably a lithium-alloy anode electrode on a nickel current collector, a cathode comprising a PTFE binder and a nonaqueous electrolyte comprising a lithium salt. Spillman teaches in column 4, lines 61-63, that the cell also comprises a separator. Spillman teaches in column 8, lines 20-34, that the cell is produced by providing an anode comprising lithium to a nickel current collector, positioning a separator between the anode and the cathode and activating the anode and the cathode current collector with an electrolyte.

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***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 7, 13-18 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nimon et al. (6,225,002).

Nimon et al. teaches in column 15, claims 17, 22 and 38, that the a battery cell comprising a negative lithium electrode, a positive electrode, a separator and an electrolyte including a main solvent is a linear polyether and a dioxolane co-solvent and comprises a lithium salt. Nimon et al. teaches in column 7, lines 53-65, that the lithium electrode is combined with a sulfur-based positive electrode. Nimon et al. teaches in column 9, lines 30-48, that the lithium electrode is composed of substantially entirely of lithium metal and the positive electrode, preferably, is composed of an active material including elemental sulfur, a metal polysulfide, etc. In particular preferred positive electrode comprises  $\text{Li}_2\text{S}_n$  where  $n = 6 - 12$ . Nimon et al. teaches that battery cells containing dioxolane-treated lithium electrodes exhibit improved cycling performance.

In the event any differences can be shown for the lithium negative electrode product of the product by process limitation, as opposed to the product taught by Nimon et al., such differences

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would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results. *In re Thrope* 227 USPQ 964; (*Fed. Cir.* 1985).

With respect to the product by process limitation, the determination of patentability is based upon the product itself not upon the method of its production. *In re Thrope* 227 USPQ 964; *In re Brown* 173 USPQ 685; *In re Bridgeford* 149 USPQ 55; *In re Wertheim* 191 USPQ 90. Any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the Examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the Applicants to establish that their product is patentably distinct. *In re Brown* 173 USPQ 685 and *In re Fessmann* 180 USPQ 324.

7. Claims 1, 6, 7, 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Skotheim et al. (5,961,672).

Skotheim et al. teaches in column 11, line 59 column 12, line 3, wound AA size cells were assembled comprising a lithium anode, a separator and a cathode comprising sulfur, carbon, silica and a TEFLON™ (PTFE) binder and the cells were filled with an liquid electrolyte and a lithium triflate salt. Skotheim et al. teaches in columns 13-14, claims 1 and 15 that the lithium anode has a lithium surface.

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In the event any differences can be shown for the lithium negative electrode product of the product by process limitation, as opposed to the product taught by Skotheim et al., such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results. *In re Thrope* 227 USPQ 964; (Fed. Cir. 1985).

With respect to the product by process limitation, the determination of patentability is based upon the product itself not upon the method of its production. *In re Thrope* 227 USPQ 964; *In re Brown* 173 USPQ 685; *In re Bridgeford* 149 USPQ 55; *In re Wertheim* 191 USPQ 90. Any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the Examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the Applicants to establish that their product is patentably distinct. *In re Brown* 173 USPQ 685 and *In re Fessmann* 180 USPQ 324.

8. Claims 1, 6, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spillman et al. (6,410,181) in view of Takeuchi et al. (JP 4-22068, abstract) or Hope et al. (4,888,206).

Spillman et al. teaches in column 1, lines 46-65, that lithium-magnesium alloy can be used to extend the temperature tolerance of a lithium anode above 180 degrees C. Spillman et al. teaches in column 3, lines 1-65, that the cell includes an anode electrode preferably a lithium-alloy

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anode electrode on a nickel current collector, a cathode comprising a PTFE binder and a nonaqueous electrolyte comprising a lithium salt. Spillman teaches in column 4, lines 61-63, that the cell also comprises a separator. Spillman teaches in column 8, lines 20-34, that the cell is produced by providing an anode comprising lithium to a nickel current collector, positioning a separator between the anode and the cathode and activating the anode and the cathode current collector with an electrolyte.

Spillman et al. discloses the claimed invention except for specifically teaching that the lithium metal is melted under an inert gas atmosphere.

Takeuchi et al. teaches that is known to form metal thin films of lithium by disposing a metal or metal alloy on a metal film current collector and heating and melting the same and blowing an inactive gas thereto so that the metal or metal alloy spreads over the current collector and forms a thin film.

Hope et al. teaches that it is known to coat a substrate with alkaline or alkaline earth metal melt fine droplets in a pure inert gas environment.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to melt the lithium metal under an inert gas environment because Takeuchi et al. or Hope teaches that this is well known in the art of forming lithium metal films on current collectors.



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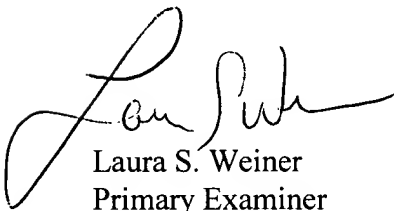
*Allowable Subject Matter*

9. Claims 5 and 8-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura Weiner whose telephone number is (703) 308-4396. The examiner works a flexible schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (703) 308-2383. The fax phone number for non-after finals is 703-872-9310 and the fax phone number for after-finals is 703-872-9311.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Laura S. Weiner  
Primary Examiner  
Art Unit 1745  
November 13, 2002